

RESEARCH NOTE

***CENTRUROIDES HASETHI* POCOCK, A JUNIOR SYNONYM
OF *CENTRUROIDES TESTACEUS* (DEGEER)
(SCORPIONES, BUTHIDAE)**

DeGeer (1778) described *Scorpio testaceus* from specimens collected in "Amerique" and, since that time, no one has been able to assign a correct locality to that taxon. This species, now considered a valid member of the genus *Centruroides*, was redescribed by Sissom and Francke (1983). Those authors discounted previous records of *C. testaceus* as being based upon misidentifications, including long-accepted records from Montserrat and Hispaniola (Haiti). Because the two syntypes of *C. testaceus* represented different species, the lectotype designated by Sissom and Francke remained the only known specimen of *C. testaceus*.

While sorting through undetermined scorpion material from the Field Museum of Natural History, Chicago, I had the opportunity to examine a specimen of *Centruroides hasethi hasethi* Pocock from the island of Curaçao. I was immediately struck by the resemblance of the specimen from Curaçao to the lectotype of *C. testaceus* and borrowed the types of *C. testaceus* and *C. hasethi* from their respective depositories. Comparison of the type specimens confirmed my suspicions that *C. testaceus* and *C. hasethi* were conspecific.

Sissom and Francke (1983) mistakenly identified the lectotype of *C. testaceus* as a female because its metasomal segments are not as long and slender as those of males of most species of *Centruroides* (including the male syntype of *Scorpio testaceus* accompanying the lectotype). Unfortunately, the lectotype was pinned and dried and could not be sexed by the presence or absence of genital papillae. As a result, our morphometric comparisons with *C. hasethi* were based on females of that species. It is now clear that the lectotype of *C. testaceus* is indeed a male, and its morphometrics and meristics are virtually identical with those of male *C. hasethi* from Curaçao (Bakker 1963).

Since Bakker's (1963) study of the *Centruroides* populations of Curaçao and neighboring

islands, *C. hasethi* has been considered polytypic, with two distinct subspecies: *C. hasethi hasethi* Pocock from Curaçao and Bonaire, and *C. hasethi arubensis* (Bakker) from Aruba. Bakker (1963) distinguished the two subspecies by the following characters (based on comparisons between the populations of *C. hasethi hasethi* from Curaçao and *C. hasethi arubensis* from Aruba). (1) in *C. h. hasethi*, males have 27-29 pectinal teeth and females 25-27 teeth; in *C. h. arubensis*, males have 23-25 teeth and females 21-23; (2) *C. h. hasethi* range up to 75 mm in body length, whereas *C. h. arubensis* reach only 55 mm in length; (3) *C. h. hasethi* have proportionately longer metasomal segments; and (4) *C. h. hasethi* have proportionately longer pedipalpal femora and patellae. Interestingly, according to measurements and ratios published by Bakker (1963), the morphometrics of the Bonaire population are in some cases intermediate between those of the populations of Curaçao and Aruba, suggesting that further study of the taxonomic status of each population may be warranted. Based on the observations above and on direct comparisons of type specimens, there is no doubt that *C. testaceus* and *C. hasethi hasethi* belong to the same taxon. Further, because of the morphometric similarities with specimens from Curaçao, it is probable that the lectotype of *C. testaceus* originated from that island, and I hereby restrict the type locality of *C. testaceus* to Curaçao, Netherlands Antilles. Pending further investigation of the various island populations, *arubensis* is considered a subspecies of *C. testaceus*.

As a consequence of the above observations, the following synonymies are proposed: *Centruroides hasethi* Pocock, 1893 = *Centruroides testaceus* (DeGeer, 1778); *C. hasethi hasethi* Pocock, 1893 = *C. testaceus testaceus* (DeGeer 1778); and *C. hasethi arubensis* (Bakker, 1963) = *C. testaceus arubensis* (Bakker, 1963).

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LITERATURE CITED

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Sissom, W. D. & O. F. Francke. 1983. Redescription of *Centruroides testaceus* (DeGeer) and description of a new species from the Lesser Antilles (Scorpiones: Buthidae). Occas. Papers Mus. Texas Tech Univ., 88:1-13.

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BOOK REVIEW

Polis, Gary A. 1990. The Biology of Scorpions. Stanford University Press, Stanford, California. 587 pp. (Price \$85.00.)

The editor of this volume, Gary Polis, and a determined crew of nine contributors have compiled an impressive assemblage of fact and esoterica about world scorpions; 485 pages of text in all and covering morphology, systematics, paleontology, biogeography, population biology, ecology, behavior, environmental physiology, neurobiology, venom toxicology, and even mythology. The comprehensiveness of coverage and the terse, highly readable style of the book suggest what might be its hidden purpose—the attraction of young scientists into an open field of overlooked research. The first two chapters, a full third of the book, give excellent preparation for literature reading and research on scorpions. There are diagrammatic summaries of basic anatomy (Hjelle) and group systematics, with lucid descriptions of biogeography and paleontology (Sissom). The epic restudy of the scorpion fossil record by Kjellesvig-Waering (published 1986) is carefully summarized so that even a physiologist can follow the emergence of the group from gill-breathing descendants of a eurypterid line (Silurian aquatic forms), through the appearance of terrestrial fauna (probably upper Devonian) and their peak in species diversity during

the Carboniferous (at least 13 superfamilies compared to the modern three). We are reminded that the 1400 species surviving today are remarkably similar to their Paleozoic ancestors although mere remnants of what once was. There are useful keys to modern families, subfamilies and genera, with clear drawings of diagnostic features used to distinguish them.

The middle third of this book is dedicated to life history (Polis and Sissom), behavior (Warburg and Polis), ecology (Polis) and predator-prey relations (McCormick and Polis) of scorpions. Here we learn just how little is known about such basic characteristics as embryology (perhaps a dozen works in all, the most complete published before 1900), post-natal growth and sexual development (some live 25 years). Most scorpions live in deserts or temperate regions of the world as solitary, cannibalistic burrowers. Given the impracticalities of working in deserts at night, one is sympathetic to Polis's assertion that "ecology is the least known aspect of scorpion biology," and is deserving of much greater attention. Here Polis has been a vanguard, utilizing portable UV lights (scorpion cuticle fluoresces under UV) to make broad-ranging observations of natural habits, population biology and community structure. Many unanswered questions arise in these pages, especially concerning tropical scorpions, which are virtually unstudied.